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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/017,186	12/07/2001	Sadeg M. Faris	Reveo-0153USAOON00	6324
26665	7590	08/10/2006	EXAMINER	
REVEO, INC. 3 WESTCHESTER PLAZA ELMSFORD, NY 10523			CHIN, PAUL T	
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			3652	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/017,186	Applicant(s) FARIS, SADEG M.	
	Examiner PAUL T. CHIN	Art Unit 3652	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 February 2006 and 02 May 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,6-9 and 16-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,6-9 and 16-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Applicant's amendments filed February 13, 2006, and May 31, 2006, and the arguments presented therewith have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, the arguments are moot in view of a new ground(s) of rejection. Accordingly, applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**.

Specification

1. The disclosure is objected to because of the following informalities: it appears on page 10, lines 7,8, and 17, the phrase "n + x" should be changed to -- n + y -- (referring to level in a y axis) and on page 14, line 22, the reference number "850" should be changed to -- 950 -- (Figs. 11A and B). Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1,6-9, and 16-21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The exact meaning of the recited clause "each level has a characteristic thickness defining a length of the openings therein t_n , and a period p_n , wherein are substantially equivalent to each other" (claims 1 and 16) is vague and indefinite. It is unclear how the characteristic thickness of each level defines "a length of the openings". Note that "a length of the openings" is undefined and the diameters of the openings at each level are different. Moreover, the recited phrase "a period t_n " is vague and indefinite because it is unclear the meaning of "a period". Further, the recited clause "wherein are substantially

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equivalent to each other" is not clearly understood because applicant fails to clearly define the equivalency of "length", or "width" or "thickness", or "diameter" of the structures.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1,6,8, and 16-19, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Bhandarkar et al.' handler (5,967,577) (see PTO-892).

Bhandarkar et al. (5,967,577) discloses a handler for picking up an object, comprising a body (Fig. 3) having a plurality of openings including a holding surface level and a suction level, wherein the openings (54,54) at the suction level are larger than the openings (42,42) at the holding level, and further wherein the openings at the suction surface level are in fluid communication with at least a portion of the openings at the holding surface level, and a compressed air container (72), or an epoxy container, a conduit (70), and a controller (Col 5, lines 16-27), which are a vacuum source creating a pressure force, attached to the body at the suction surface level. Note that Bhandarkar et al.' handler (5,967,577) shows that the numbers of the openings (42,42) at the holding surface is greater than the numbers of the openings (54,54) at the suction surface level, and further shows at least one intermediate level between the holding surface and the suction surface levels wherein the openings (50,50, or 52,52) of the intermediate level are larger than the openings (42,42) of the holding surface level and smaller than the

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openings (54,54) of the suction surface level. Similarly, the numbers of the openings (50,50, or 52,52) at the intermediate level is greater than the numbers of the openings at the suction surface level. Bhandarkar et al.' handler (5,967,577), as best understood, shows a holding surface level having a thickness which defines a length of the openings (42,42) and a period of the openings, as shown in figure 9, have the same distance or dimension. Bhandarkar et al.' handler (5,967,577) does not show the dimensional structure, i.e., each level has a thickness defining a length of the openings and a period which has the same distance or dimension. Note that Bhandarkar et al.' Handler shows spacers (37) (Fig. 3), which can be arranged to have different heights with the constraint to provide different spacing between the plates or levels (44,46,48) (Col. 6, lines 11-20). Accordingly, it would have been obvious to those skilled in the art to provide different thickness of the levels (46,48) (instead of providing spacers 37,37 which have different heights) on the Bhandarkar et al.' handler (5,967,577) to provide a continuous vacuum suction.

Re claim 8, Bhandarkar et al.' handler (5,967,577) shows the walls and baffles are formed of metal, aluminum (see Col 4, lines 29-35).

With respect to claims 1 and 16, Bhandarkar et al.' Handler further shows a vacuum source (74). Note that Bhandarkar et al.' handler (5,967,577) is capable of performing the functional limitations as recited in the claims.

Re claims 17-19, Bhandarkar et al.' handler (5,967,577) does not clearly show the structural dimensions such as the ratio of the handler body thickness (Fig. 3) to the holding surface hole diameter (42) is about 10^7 to about 10^2 or 10^6 to about 10^4 , or 10^5 to 10^4 . However, it would have been obvious to those skilled in the art to optimize the ratio of the thickness of the body and the hole diameter as listed above on the

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Bhandarkar et al.' handler (5,967,577) in order to manageably control the desired fluid flow. Regarding the specific ratios of the body thickness to the hole diameter, it is noted that while applicant indicates that it is desirable ratios vary from about 10^7 to about 10^2 , there have been no reason given as to why other ratios outside of the larger range would to function just as well as intended. It would appear that other ratios close to about 10^6 to about 99 would function as well as intended. Accordingly, there is lack of criticality for the particular claimed ratios. It is maintained that the figure 2 of Bhandarkar et al. handler (5,967,577) is similar to the provided figure 2 of the application.

6. Claims 7, 20, and 21, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Bhandarkar et al.' handler (5,967,577) in view of Malcosky (3,809,506) (see PTO-892).

Bhandarkar et al. (5,967,577), as presented in section 5 above, do not show at least one or more micro-mechanical valves in the at least one or more openings. However, Malcosky (3,809,506) teaches a pump having an opening (see Fig. 3) and a valve (64) being attached at the opening to close or open the opening. Accordingly, it would have been obvious to those skilled in the art to provide a mechanical valve or a micro-mechanical valve or each valve on each opening at each level of Bhandarkar et al.'s handler (5,967,577) as taught by Malcosky (3,809,506) in order to manageably control the fluid flow. It is also pointed out that the size of the hinge valve is an obvious to those skilled in the art to optimize with respect to the relative opening to control the flow.

7. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bhandarkar et al. handler (5,967,577) in view of Ogawa (4,858,975) (see PTO-892).

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Bhandarkar et al.' handler (5,967,577), as presented above, does not show the handler is being made of a semiconductor material (from the group consisting of silicon, III-V type semiconductors, II-IV type semiconductors, II-VI type semiconductor, IV-VI type semiconductors, Ge, C, Si-oxide, Si-nitride, and at least one of the foregoing materials). However, Ogawa (4,858,975) shows a wafer holder (27) being made of silicon for etching process (Col 6, lines 60-68). Accordingly, it would have been obvious to those skilled in the art to make the body of Lovegrove (2,572,640) with a silicon material as taught by Ogawa (4,858,975) to provide minimum contamination to the system.

8. Claims 1,6,8, and 16-19, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Lovegrove (2,572,640) (see PTO-892).

Lovegrove (2,572,640) discloses a handler for applying vacuum holding force to a fragile object (19), comprising a body (Fig. 2) having a plurality of openings including a holding surface level and a suction level, wherein the openings (22,22 or 24,24) at the suction level are larger than the openings (18,18, or 14, 14) at the holding level, and further wherein the openings at the suction surface level are in fluid communication with at least a portion of the openings at the holding surface level. It is pointed out that Lovegrove (2,572,640) also discloses a vacuum source (not shown) (see Col 5, lines 10-20) attached to the handle body (see Fig. 2) through a hose (30) at the suction surface level. Lovegrove (2,572,640) shows that the numbers of the openings (14, 14 or 18, 18) at the holding surface is greater than the numbers of the openings (22,22), or openings on the plate (20,23) at the suction surface level and also shows at least one intermediate level (20) between the holding surface and the suction surface levels wherein the openings (22,22) (see Fig. 1) of the intermediate level are larger than the openings (14,14,18,18)

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(Fig. 2) of the holding surface level and smaller than the openings (24,24) of the suction surface level. Similarly, the frequency of the openings (22,22) at the intermediate level is greater than the numbers of the openings (24,24) at the suction surface level.

Lovegrove (2,572,640) does show different thickness of levels as shown in figure 2, but does not specifically show the dimensional structure, i.e., each level has a thickness defining a length of the openings and a period which has the same distance or dimension. However, it would have been obvious to those skilled in the art to provide different thickness of the levels (46,48) with respect to the period on the Lovegrove (2,572,640) to provide a continuous fluid flow.

Re claim 8, Lovegrove's handling device (2,572,640) is being made of lightweight metal (Col 1, lines 22-32).

Re claims 17-19, Lovegrove's handling device does not clearly show the structural dimensions such as the ratio of the handler body thickness (Fig. 3) to the holding surface hole diameter (42) is about 10^7 to about 10^2 or 10^6 to about 10^4 , or 10^5 to 10^4 .

However, it would have been an obvious to those skilled in the art to provide the desired ratio as listed above on the Lovegrove's handling device in order to manageably control the desired fluid flow.

9. Claims 7,20, and 21, as best understood, are rejected under 35 U.S.C. 102(e) as being anticipated by Lovegrove (2,572,640) in view of Malcosky (3,809,506).

Lovegrove (2,572,640), as presented above, does not clearly show at least one micro-mechanical valve in the at least one of the openings. However, Malcosky (3,809,506) teaches a pump having an opening (see Fig. 3) and a valve (64) being attached at the opening to close or open the opening. Accordingly, it would have been obvious to those

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skilled in the art to provide a mechanical valve or a micro-mechanical valve on the at least one of the openings, or a plurality of valves on each level of Lovegrove (2,572,640) as taught by Malcosky (3,809,506) in order to manageably control the fluid flow.

10. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lovegrove (2,572,640) in view of Ogawa (4,858,975) (see PTO-892).

Lovegrove (2,572,640), as presented above, does not show the handler is being made of a semiconductor material (from the group consisting of silicon, III-V type semiconductors, II-IV type semiconductors, II-VI type semiconductor, IV-VI type semiconductors, Ge, C, Si-oxide, Si-nitride, and at least one of the foregoing materials). However, Ogawa (4,858,975) shows a wafer holder (27) being made of silicon (Col 6, lines 60-68). Accordingly, it would have been obvious to those skilled in the art to make the body of Lovegrove (2,572,640) with a silicon material as taught by Ogawa (4,858,975) to provide minimum contamination to the device.

Response to Arguments

11. Applicant's arguments with respect to claims 1,6-9, and 16-21 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kinoshita et al. (5,534,073) shows a vacuum gripper (Fig. 20) having a main body which has a plurality of holes (113,113) positioned on the main body. Figure 21 shows the thickness of main body with respect to the thickness of the wafer.

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13. Applicant's amendment (the addition of new structural limitations in claims 1 and 16 in combination with other structural limitations) necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PAUL T. CHIN whose telephone number is (571) 272-6922. The examiner can normally be reached on MON-THURS (7:30 -6:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, EILEEN LILLIS can be reached on (571) 272-6928. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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